JAPANESE PATENT OFFICE
PATENT JOURNAL (U)
KOKAI UTILITY MODEL NO. SHO 59[1984]-167842

Int. Cl.[3]:	E 02 D 29/02
Sequence No. for Office Use:	7505-2D
Filing No.:	Sho 58[1983]-61400
Filing Date:	April 22, 1983
Publication Date:	November 10, 1984
	(Total of 13 pages)
Examination Request:	Not filed

KENTIISI [TRUNCATED QUADRILATERAL PYRAMID] BLOCK

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[There are no amendments to this patent.]

Claims

1. A type of KENTIISI block [truncated quadrilateral pyramid block] characterized by the following facts: the KENTIISI block is made of concrete and has an integrated shape with a rectangular face plate and anchor plate connected by a column body; a protruding portion having a step surface protruding from the side edge surface is set on the inner side of the central portion of a side edge of the face plate and anchor plate; this step surface fits the inner sloped surfaces of the face plate and anchor plate at corner portions of a block of the same shape set adjacent to said side edge of the block.

2. The KENTIISI block described in Claim 1 characterized by the fact that said step surface is a partial cylindrical surface or a partial truncated conical surface.

Detailed explanation of the invention

This device pertains to improvement of KENTIISI blocks that are stacked up along a sloped surface to form a holding wall for preventing collapse of the sloped surface.

The shapes of conventional KENTIISI blocks are shown in Figures 1 and 2. As shown in Figures 4 and 5, holding wall (2) is constructed to prevent collapse of earth (1) piled up along the sloped surface of land. In this case, (3) and (4) represent unit KENTIISI blocks. As shown in Figures 2 and 5, block (4) has an integrated structure with rectangular face plate (5) and anchor plate (6) connected by column body (7). As shown in Figures 1 and 4, block (3) consists of only face plate (5) and column body (7). (8) represents filling concrete that is injected to fill the void portion of blocks (3) and (4) that are stacked up.

For KENTIISI blocks (3) having no anchor plate (6), it is impossible to stack only the blocks (dry masonry). Consequently, filling concrete (8) is applied to fill the voids among blocks (3)...(3) so as to solidify them while they are stacked up layer by layer. This makes the operation complicated, and is thus undesirable. On the other hand, for KENTIISI blocks (4) having anchor plate (6), after plural layers of the blocks are dry stacked, filling concrete is flowed in to solidify them. In this way, the operation efficiency can be increased. However, for these blocks (4) also having anchor plate (6), since blocks (4)...(4) that are dry stacked are set in contact with each other only at the side edge surfaces between face plates (5) and anchor plates (6), workers have to be very careful to ensure that blocks (4)...(4) are stacked up correctly, and, when filling concrete (8) is injected, the blocks may shift and diverge from the holding wall surface. This is undesirable. Also, for such blocks (4), stress is concentrated at the connecting portion between column body (7) and anchor plate (6), this portion is prone to damage, and portions where attachment between filling concrete (8) and block (4) is poor may be broken, so that the block is driven out by the pressure of the earth to protrude from the holding wall surface.

In order to prevent mutual divergence between blocks during dry masonry, as shown in Figure 3, cut-in (9) is formed on the side edges of face plate (5) and anchor plate (6). However, as cut-in (9) is formed, the thickness of the side edge portion of face plate (5) decreases, so that damage may be easily incurred. Also, for such blocks, it is impossible to form a curving holding wall. This is also undesirable.

The objective of this device is to solve the aforementioned problems of conventional KENTIISI blocks by providing a type of KENTIISI block which has a simple structure yet can reliably prevent mutual divergence of positions of blocks in dry masonry and does not decrease the strength of the block. Also, this device provides a type of KENTIISI block characterized by

the fact that even when the connecting portion between the face plate and the anchor plate is broken, there is still no protrusion of the block under pressure of the earth, and the block can be used to construct a bending holding wall.

That is, this device provides a type of KENTIISI block characterized by the following facts: as can be seen in the application example shown in Figures 6 and 7, on the inner side of the central portion of one side edge (11) and (12) of face plate (5) and anchor plate (6) of blocks (10a) and (10b), protruding portion (17) having step surfaces (15), (16) protruding from side edge surfaces (13), (14) is set; said step surfaces (15), (16) are fit to the inner sloped surfaces of the face plate and anchor plate at the corner portions of blocks of the same shape set adjacent to said side edges (11), (12) of blocks (10a), (10b). Figure 6 illustrates Application Example 1 of this device, and Figure 7 illustrates Application Example 2 of this device. In the application examples, subscripts a and b indicate the portions in the different forms. In the specification, said subscripts a and b are omitted when a common constitution and function can be described.

Figure 8(a) is a front view of the holding wall surface constructed by KENTIISI blocks (10a), (10b). Figure 8(b) is a cross-sectional front view illustrating the state after cutting off face plate (5) of KENTIISI blocks (10a), (10b) in the dry masonry. In Figure 8, unit block A is the focus of attention. This block A is coupled to blocks B, C and step surfaces (15), (16) of protruding portion (17) of said block are fit to the corner inner slope surfaces of face plate (5) and anchor plate (6) of blocks B, C stacked above block A. The two lower corner portions of face plate (5) and anchor plate (6) of block A are fit to step surfaces (15), (16) of protruding portion (17) of blocks D, E positioned below said block A, which block is coupled to blocks D, E. Also, coupling is made with adjacent blocks F, G via said blocks B, C, D, E. Consequently, said unit block A is coupled to all of the surrounding blocks, that is, blocks B-G. Due to such coupling, when the blocks are stacked, the relative positioning of the blocks can be performed easily, and the operation can be finished in a shorter time. Even when the filling concrete is injected, there is still no divergence between the blocks. Also, there is no decrease in the strength of the blocks, and as the shape of the blocks is not complicated, their formation is not difficult.

In Application Example 2, step surfaces (15b), (16b) of protruding portion (17b) are formed as a partial cylindrical surfaces or partial truncated conical surfaces. As shown in Figure 9, even when the blocks adjacent to each other are set at an angle in the vertical direction, it is still possible to fit step surfaces (15b), (16b) with the corner portions of face plate (5) and anchor plate (6), and it is possible to construct a curved holding wall from blocks (10b) that are coupled to each other. In this case, the radius of said partial cylindrical surface or partial truncated conical surface is nearly equal to the inner slope distance between face plate (5) and anchor plate (6). When the constructed holding wall bends outward, it is necessary for length L of anchor plate (6) to be smaller than length W of face plate (5). Adjustment of the length of anchor plate (6) can be

performed easily by filling an appropriate filling material into the voids of the mold for forming block (10b).

In addition, for block (10b) in Application Example 2, recess (18) is set at the central portion of said protruding portion (17b). By setting said recess (18), as shown in Figure 10, in this structure, filling concrete (8) also enters said recess (18), so that even when the connecting portion between anchor plate (6) and column body (7) is broken, the block still does not protrude.

As explained above, for the KENTIISI block of this device, while the structure is simple, the stacked blocks are coupled to each other free of divergence in position. Due to the mutual coupling among the blocks, the relative positions of the blocks are defined. Consequently, when the blocks are stacked, positioning can be performed easily, and the operation can be performed quickly.

Also, by adopting the embodiment illustrated in Figure 7, it is also possible to construct a curved holding wall from blocks that are coupled to each other. It is possible to prevent protrusion of the block from the holding wall surface due to damage to a block. This is an excellent effect.

Brief description of the figures

Figures 1 and 2 are oblique views illustrating conventional KENTIISI blocks. Figures 4 and 5 are cross-sectional views of a holding wall constructed by the masonry of the blocks. Figure 3 is an oblique view illustrating conventional KENTIISI blocks with cut-ins formed to prevent mutual position divergence of the blocks in dry masonry. Figure 6 is an oblique view illustrating Application Example 1 of the KENTIISI block of this device. Figure 7 is an oblique view illustrating Application Example 2. Figure 8(a) is a front view of the holding wall constructed by the KENTIISI blocks. Figure 8(b) is a cross-sectional front view with the face plate of blocks cut off to illustrate the dry masonry state of the KENTIISI blocks of this device. Figure 9 is a plan view illustrating the relationship among blocks of Application Example 2 that are used to form a curved holding wall. Figure 10 is a partial cross-sectional view of a holding wall constructed from the blocks in Application Example 2.

5 Face plate
6 Anchor plate
7 Column body
10 KENTIISI block
11, 12 One side edge
13, 14 Side edge surface

15, 16 Step surface
17 Protruding portion

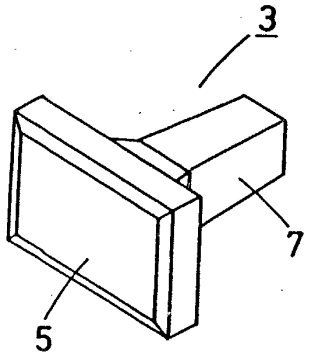

Figure 1

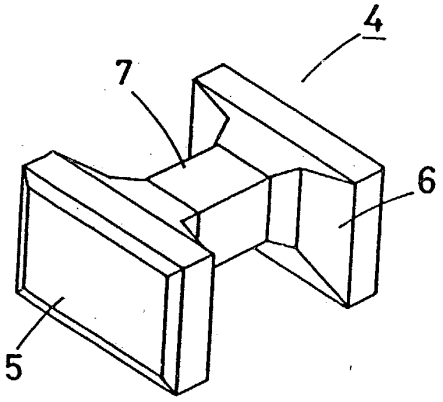

Figure 2

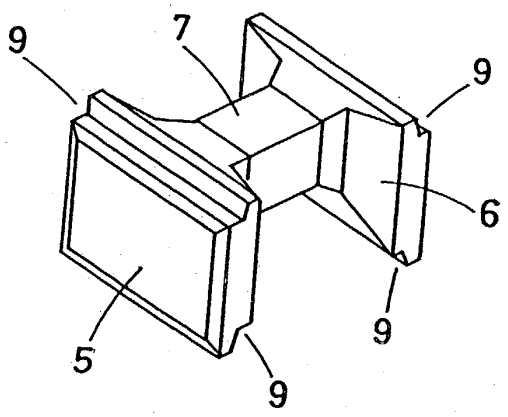

Figure 3

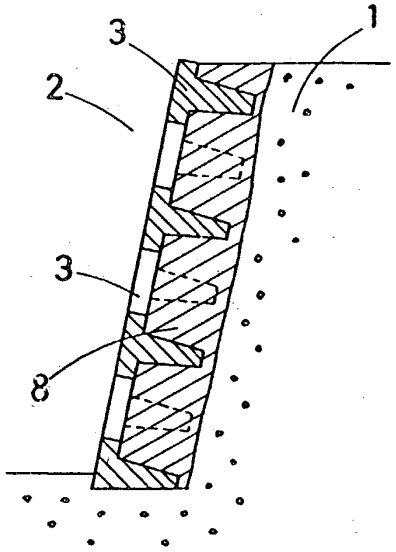

Figure 4

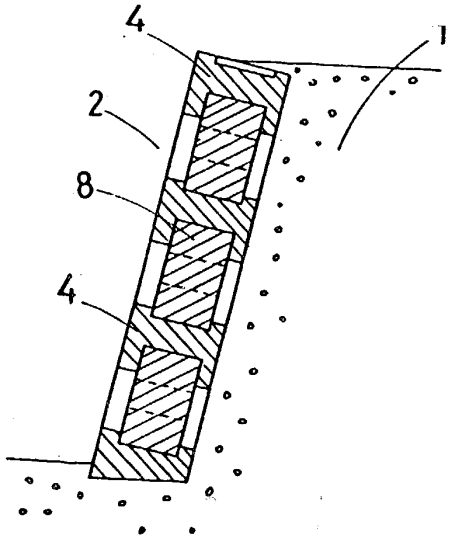

Figure 5

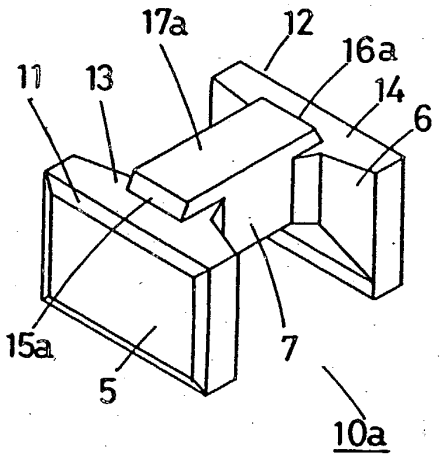

Figure 6

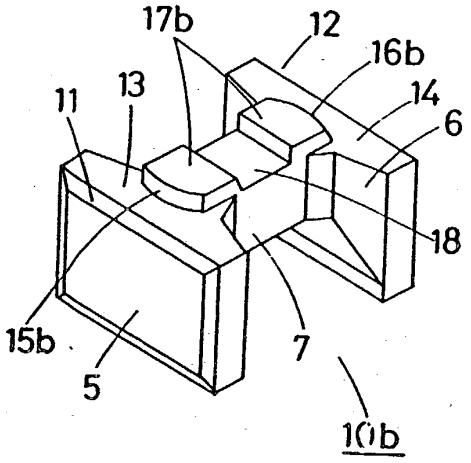

Figure 7

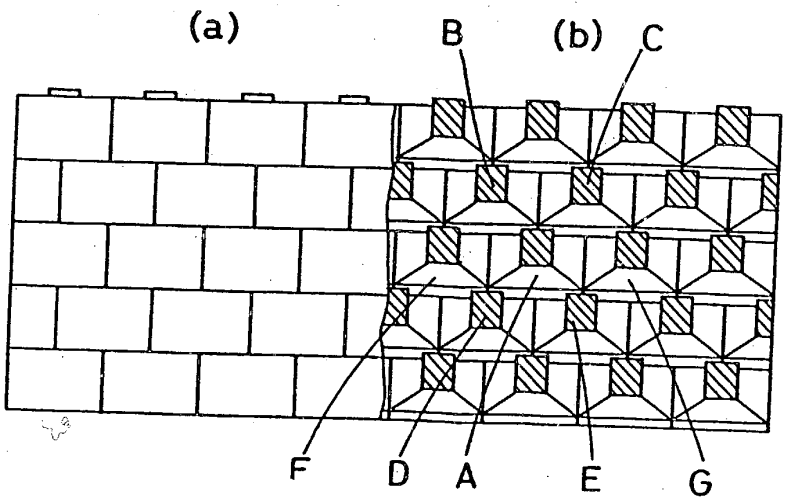

Figure 8

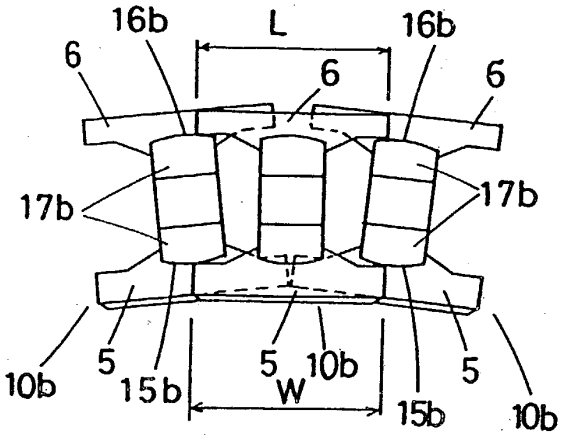

Figure 9

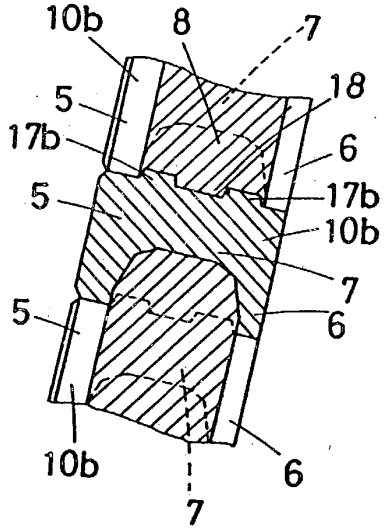

Figure 10